Fermilab — Fermi National Accelerator Laboratory

Technical Division-Machine Shop

Procedure Qualification Record	**No. Fermi PQR SS-9-001**	Date: 1/15/2010

Revision: __ **Date:** _____ **Remarks:**

Welding Process/Weld Type: *GTAW/Manual*	*In accordance with:*	*Fermi WPS SS-9-001*

Joints (QW-402)

Joint Design:	*V Groove-Open Root*
Backing Material (Type)	*Open Root/Gas Only*
Backing	*Argon*
Retainer	*None*
Non-Metallic	*Not Used*
Metallic Non-Fusing	*Not Used*

Details:

Details: *Single-V Groove Weld Open butt, no back weld*
Root Opening: *0-1/8"* ***Root Face:*** *0-1/8"* ***Groove Angle:*** *60°-90°*
T=Thickness-0.105" *Argon Gas Backing*

Base Metals (QW-403)			**Post Weld Heat Treatment (QW-407)**
Material Spec., Type or Grade:			**Type:** *No PWHT performed*
SA 240 plate type 304	**To**	*SA 240 plate type 304*	**Temperature:**
P Number *8, Group 1*	**to**	**P Number** *8, Group1*	**Time:**
Thickness of Coupon (in.)		*.105"-.210"*	
Diameter of Test Coupon (in.)			

Filler Metals (QW-404)		**Gas (QW-408)**	**Percent Composition**	
SFA Specification	*5.9*	**Gas**	**Mixture%**	**Flow Rate**
AWS Classification:	*308/308L*	**Shielding** *Argon*	*99.99%*	*15 CFH*
Filler Metal F-No.:	*6*	**Trailing:** *None*		
Weld Metal Analysis A-No.:	*8*	**Backing:** *Argon*	*99.99%*	*15 CFH*
Size of Filler Metal (in.):	*.045, 1/16, 3/32Ø*	**Other:** *Maintain Argon purge on backside of plate for entire weld. Use alignment fixture to position plates for welding and purging. Non-Pulsing Current*		
Weld Deposit "t"(in.):	*0.105*			
Filler Metal Product Form:	*Bare/Solid*			

Positions (QW-405)		**Electrical Characteristics (QW-409)**	
Position of Joint:	*Flat-1G*	**Current/Polarity:** *DCEN*	
Weld Progression:		**Amps:** *84*	**Volts:** *13.5*
Other:		**Tungsten Type & Size:**	*3/32"Ø EWTh-2*
		Other: *Non-Pulsing Current*	

Preheat (QW-406)		**Technique (QW-410)**	
Preheat Temperature:	*50 ° F Minimum*	**Travel (ipm):** *As Required*	**Oscillation:** *None*
Interpass Temperature:	*350° F Maximum*	**String/Weave Bead:**	*Stringer*
Minimum Weld Temp.	*50° F*	**Multiple/Single Pass (per side)**	*Single*
		Multiple/Single Electrode:	*Single Electrode*
		Nozzle/Gas Cup Size:	*#6*

Use of Fermilab Welding Procedures and Welder Qualifications for non-Fermilab work shall be at the sole risk and responsibility of the Subcontractor, and the Subcontractor shall indemnify and save Fermilab and the government harmless from any and all claims, demands, actions or causes of action, and for any expense or loss by reason of Subcontractor's and their employees possession and use of Fermilab procedures and qualifications.

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Fermilab	*Fermi National Accelerator Laboratory* *Technical Division-Machine Shop*	
Procedure Qualification Record	**No. *Fermi PQR SS-9-001***	Date: *1/15/2010*
Welding Process/Weld Type: *GTAW/Manual*	**WPS No.** *Fermi WPS SS-9-001*	

Tensile Test (QW-150)

Specimen No.		Area (Squared in.)	Ultimate Total Load (lbs.)	Ultimate Stress (PSI)	Failure Type & Location
001	*0.1000 x 0.7500*	*0.0750*	*5970.0*	*79600*	*Haz/Ductile*
002	*0.1010 x 0.7520*	*0.0760*	*5984.0*	*78700*	*Haz/Ductile*

Guided Bend Test (QW-160)

Figure Number & Type	Result	Figure Number Type	Result
QW-462.3 (a) Face Bend	*Pass-No Visible Cracks*	QW-462.3 (a) Root Bend	*Pass- No Visible Cracks*
QW-462.3 (a) Face Bend	*Pass- No Visible Cracks*	QW-462.3 (a) Root Bend	*Pass- No Visible Cracks*

Welder's Name : *William Gatfield*	ID : *04609N*	Weld Stamp : *W-12*

Visual Examination: *Acceptable*	**X-ray per ASME Section IX, QW-191.2.**

Radiography Conducted By:		

Mechanical Tests Conducted by:	*Exova Inc.*	*Ref. #914243*	**Date:** *12/07/2009*

Welding of coupon Verified by:	*Roger Hiller 00362N*	*Verification # 11272009-2RH*	Date: *11/27/2009*

We certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of Section IX of the ASME Code.

PQR prepared by: *Fermi National Accelerator Laboratory*

Roger Hiller 00362N Date *1/15/2010*

Authorized Representative

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